



On the Move

Grades K-1

Overview

As a whole group, the students will observe what happens when you put colored hot water into cold water. Individually, they will experiment with dropping water on coffee filters that have been colored with water color markers. They will observe the separating of colors on the filter. The filters can be used for an art project the next day.

Objective

- To help students understand how water causes things to move

Materials

For the presenter:

- a wide mouth glass gallon jar (clear)
- small glass bottle with a neck (clear)
- blue & green food coloring
- hot water
- cold water
- string



For each group of 5 students:

- 3 black water color marking pens
- 1 each: brown, green, orange, & purple water color marking pens
- 25 coffee filters
- 5 water droppers
- small container of water
- paper towels for spills
- 5 peieces of newspaper - large enough to dry 5 coffee flters on each

Getting Ready

Activity 1

The whole group activity should be set up in an area where all the students can see. Fill the gallon jar with cold water and the small bottle with **hot** water that has blue and green food coloring added to it. Tie a string around the neck of the bottle.

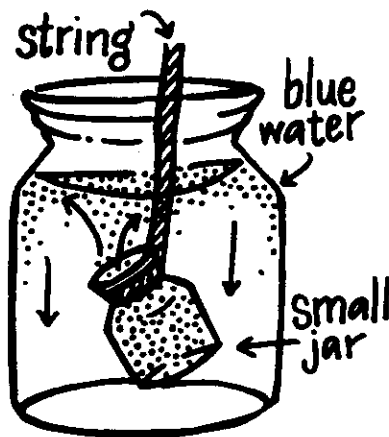
Activity 2

Have the markers, coffee filters and droppers divided into the number of student groups you have. Everything each group will need should be placed together on the table (coffee filters counted out, etc.) You will need space for the students to lay out their newspapers, with the filters, to dry.

Procedures

Begin by telling the student that today they are going to do some experiments to find out what happens when you use water to make another liquid move. Use the questions by each activity to start the students thinking and spark their interest.

Activity 1: Hot Water Hole



Questions

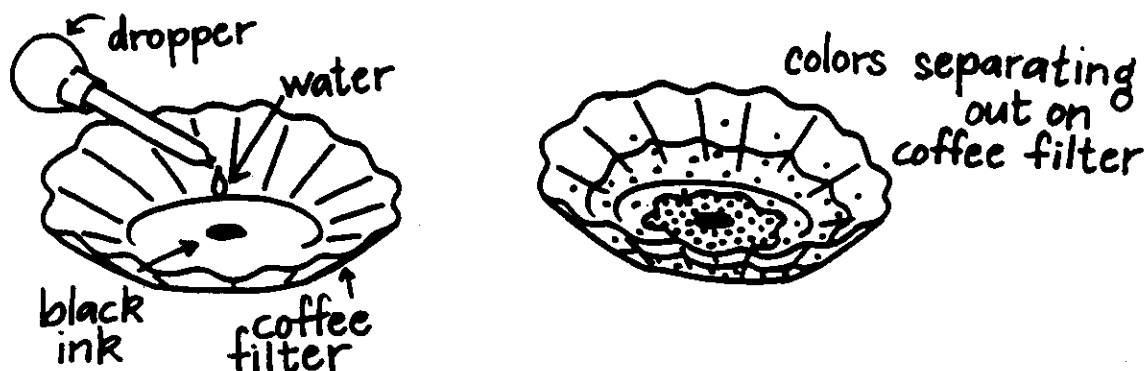
“Have you ever had a bowl of hot soup? Did you ever wonder why the soup on top tasted so much hotter than the soup below? Did you know that one kind of water will float on top of another? Do you have any idea what it might be? To find out, we will make a Hot Water Hole.” As you demonstrate this experiment, discuss with the students what you are doing and ask questions about what they observe and why it might be happening.

1. Attach a string around the neck of a small bottle.
2. Pour cold water into the jar about 2/3 full.
3. Fill the small jar with hot water and quickly add a few drops of blue or green food coloring so it will be a dark color.
4. Place the small bottle at the bottom of the jar with cold water, using the string to lower it down.

Discussion

Observe that the blue water rises to the top of the jar forming a blue-green layer on top. When water is heated, it expands and rises. Continue to watch, notice as the water starts to cool, the blue-green water starts to move down and mix with the cold water. End this experiment with the question: “What did you learn from this experiment?”

Activity 2: Separating Colors



Hold up a black marking pen. Ask the students: "Is black really black? How much do you know about colors? What does water do to ink? Let's try this experiment and find out."

Before handing out any materials show the students the materials they will get and explain what they will be doing. Explain that they will each get a filter and a dropper. Each group will have 3 black markers and a cup of water to share. Explain that you will all do the experiment at the same time and they are not to touch the materials until you give the directions. Have two students from each group come up and get the container of water, 3 black markers and enough droppers and filters for each member of their group. You will also need these materials for the demonstration. Have the students repeat what you do, one step at a time. Wait until everyone has completed the first step before moving on to the second, etc. Many children are not able to follow more than one direction at once. Remind the students that they will have to take turns with the pens.

1. Take a filter and make a small black circle in the middle with a black marking pen about as big as the top of your thumb.
2. Take your dropper and drop one drip of water on the filter.
3. Watch to see what happens.
4. Try adding one or two more drops to the filter.

You will notice that the ink starts spreading out and colors start appearing. The water separates the ink into the different colors that make it up. Ask the students: "What is happening to the black ink? What colors do you see appearing? What does this tell you about the color black? How did water make the ink move? Do you think the same thing would happen if we used a different color? Let's experiment and see."

5. Pass out orange, green, purple, and brown markers to each group. Give each group enough filters so the students can experiment with the other colors to see the effect water has on them. As you are moving around the classroom, ask the students what they are observing and why it is happening. Have the children put their names on a piece of newspaper and place their filters on them to dry.¹

¹ Filters may be used later to make butterflies with clothes pins.

Closure

Ask each child to hold up their favorite color pattern. Ask them to tell their neighbor what they learned from this experiment. Call on a couple of students to share with the class what they learned.

Clean Up

Collect markers and droppers. Have the students lay their newspaper and filters in a place to dry, throw away any garbage, and wipe off tables.